

SECTION 07 41 33 – CORRUGATED POLYCARBONATE ROOF PANELS

**PALRAM SUNSKY & SUNTUF
CORRUGATED POLYCARBONATE
ROOF PANELS
MASTER SPECIFICATION**

PALRAM INDUSTRIES (1990) Ltd. IS ENGAGED IN CONTINUING RESEARCH TO IMPROVE ITS PRODUCTS.
THEREFORE, THE RIGHT IS RESERVED TO MODIFY OR CHANGE MATERIAL IN THIS SPECIFICATION WITHOUT NOTICE

CORRUGATED POLYCARBONATE ROOF PANELS

PART 1 – GENERAL

1.1 SECTION INCLUDES:

- A. Corrugated polycarbonate roof panels.

1.2 REFERENCES:

- A. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
- B. ASTM D638 – Standard Test Method for Tensile Strength of Plastics
- C. ASTM D 648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load.
- D. ASTM D 696 - Standard Test Method for Coefficient of Linear Thermal Expansion.
- E. ASTM D 790/ASTM D 790M - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- F. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
- G. ASTM D 1929 - Standard Test Method for Ignition Properties of Plastics.
- H. ASTM D 2843 - Standard Test Method for Density of Smoke from the Burning and Decomposition of Plastics.
- I. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials
- J. ASTM G 155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non Metallic Materials
- K. Underwriters Laboratories (UL) 2218 – Impact of Prepared Roof Covering Materials
- L. QUV 313B - Accelerated Weathering Test of Non-Metallic Materials.
- M. ISO-9002 - International Standards Organization.

1.3 SYSTEM DESCRIPTION:

- A. Design requirements for installed roof panel systems:
 - 1. Windload resistance (all values depend upon corrugation profile geometry):
 - a. Positive pressure: ___ pounds per square foot (___ MPa).
 - b. Negative pressure: ___ pounds per square foot (___ MPa).
 - 2. Uplift resistance: ___ pounds per square foot (___ MPa).
 - 3. Slope: No less than 5 degrees (90mm/m) from the horizontal.
- B. Performance requirements for polycarbonate roof panels: Conforming to the following:
 - 1. Coefficient of expansion, when tested in accordance with ASTM D 696: .000036 inch per inch per degree F (0.000065 ratio per degree C).
 - 2. Modulus of elasticity, when tested in accordance with ASTM D 4065: 345,000 pounds per square inch (2378 MPa).
 - 3. Flexural strength, when tested in accordance with ASTM D 790: 13,500 pounds per square inch (93 MPa).
 - 4. Deflection temperature, when tested in accordance with ASTM D 648: 270 degrees F (132.2 degrees C) under 264 pounds per square inch (1.82 MPa) load.
 - 5. Self-ignition temperature, when tested in accordance with ASTM D 1929: Minimum 1000 degrees F (537.7 degrees C).
 - 6. Smoke density rating, when tested in accordance with ASTM D 2843: Maximum 75.
 - 7. Maximum allowable continuous service temperature: 212 degrees F (100 degrees C).
 - 8. No penetration of a 1.75" steel ball weighing 358g when dropped from 17ft in accordance to UL 2218.

1.4 SUBMITTALS:

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Polycarbonate sheet manufacturer's descriptive literature for each glazing type specified, including documentation of code compliance; include descriptive literature for recommended installation accessories.
- C. Selection Samples: Two sets of color chips representing polycarbonate sheet manufacturer's full range of available colors.
- D. Verification Samples: Two samples, minimum size 4 inches (102 mm) square, representing actual color and finish of products to be installed.
- E. Quality Control Submittals:
 - 1. Design Data: Analysis by polycarbonate sheet manufacturer verifying compliance of polycarbonate sheet glazing; include details of glazing edge engagement, and allowance for anticipated thermal movements.
 - 2. Provide Computer Aided Sheet Engineering (CASE) report based on project information available prior to bidding.
 - 3. Manufacturer Qualifications: Documentation of specified manufacturer qualifications.
 - 4. Manufacturer's Instructions: Printed installation instructions for polycarbonate sheet glazing; include storage, requirements, recommended glazing techniques, and installation accessories.
 - 5. Specimen warranty documents.
- F. Closeout Submittals:
 - 1. Operation and maintenance data: Printed instructions on recommended cleaning and maintenance materials and methods.
 - 2. Warranty documents specified in WARRANTY Article of PART 1 of this section.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Minimum fifteen (15) years' experience producing plastic glazing products.
 - 2. Registered in accordance with ISO-9002 quality standards.
- B. Regulatory Requirements: Glazing materials to comply with the following building code:
 - 1. ICC Evaluation Report: ESR-1893.
 - 2. International Building Code (IBC), 2015 Edition.
 - 3. Miami Dade County NOA #18-0328.03
- C. Mock-Ups: Supply materials for mock-ups required in affected sections.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not slide, drag, or drop polycarbonate sheet materials.
- B. Do not store polycarbonate sheet materials in areas subject to direct UV exposure.
- C. Maintain storage area in accordance with polycarbonate sheet manufacturer's instructions until installation of products.

1.7 WARRANTY

- A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.
 - 1. Duration: Ten (10) year warranty against loss of light transmission and yellowing
 - 2. Duration: Ten (10) year warranty against hail damage

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Palram Americas, Inc., which is located at: 9735 Commerce Circle.; Kutztown, PA 19530; Tel: 800-999-9459; Fax: 610-285-9928; Web: <http://www.palram.com/us>
- B. Requests for substitution will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
- C. Substitutions: Not permitted.

2.2 SCOPE / APPLICATIONS

- A. Provide corrugated polycarbonate panels for use in roof panel assemblies.
- B. Sunsky / Suntuf Corrugated Polycarbonate panels:
 - 1. Grade/Type: Sunsky / Suntuf
 - 2. Sheet Thickness: 0.032 inch (.8mm) nominal, plus or minus 5 percent.
 - 3. Sheet Thickness: 0.06 inch (1.5mm) nominal, plus or minus 5 percent.
 - 4. Sheet Thickness: 0.08 inch (2mm) nominal, plus or minus 5 percent.
 - 5. Color: Clear/Transparent 90% LT.
 - 6. Color: Solar Grey 35% LT.
 - 7. Color: Opal White 45% LT.
 - 8. Color: Soft White 85% LT.
 - 9. Performance:
 - a. Light transmission: Change not to exceed 10 percent over 10 years.
 - b. Weather resistance, when tested for 3000 hours in accordance with ASTM G 155:
 - c. Yellowing intensity: Change not to exceed a delta of 5 in 10 years (Transparent product).
 - d. Haze: Change not to exceed 5 percent in 10 years.
 - e. Less than 5% loss of tensile strength when tested to ASTM D638
 - f. Protective UV layer: Intact after testing period.
 - g. ASTM E84 Flame Spread <25 and Smoke Developed <450 equal Class A
 - h. ASTM D635 Rate of Burning = Class CC2 rating

2.3 ACCESSORIES

- A. Supply related fasteners and approved sealants and other installation accessories specified in the polycarbonate sheet manufacturer's instructions, or approved by polycarbonate sheet manufacturer, for indicated installation conditions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Examine pallets for damage immediately upon delivery.
- D. Examine panels for damage prior to installation.

3.2 PREPARATION

- A. Follow instructions contained within the manufacturer's detailed installation guide.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install plastic glazing in accordance with polycarbonate sheet manufacturer's instructions.
- B. Do not use glazing accessories not specified or approved by polycarbonate sheet manufacturer.

3.4 CLEANING

- A. Immediately after completing construction activities relating to installation of polycarbonate sheet materials, remove remainder of strippable masking from surfaces of polycarbonate sheet glazing; do not expose masking to sunlight for an extended period of time.
- B. Immediately after removing masking, clean glazing in accordance with polycarbonate sheet manufacturer's instructions:
 - 1. Rinse surface with lukewarm water.
 - 2. Wash surface with mild soap and lukewarm water.

3. Use soft cloth or sponge gently to loosen dirt and grime; scrubbing glazing surfaces, or using squeegee on glazing surfaces, is not permitted.
4. Repeat rinse as above, and wipe surface dry with soft cloth until surfaces are spotless and dry.

3.5 PROTECTION OF INSTALLED PRODUCTS

- A. Immediately after cleaning, cover polycarbonate sheet glazing surfaces with polyethylene sheeting, or other covering material approved by polycarbonate sheet manufacturer; secure covering in place by taping to framing members - do not tape covering to polycarbonate sheet materials.
- B. Protect installed glazing from damage to function or finish by subsequent construction activities.
- C. Replace glazing having damage to function, and glazing having damage to finishes which cannot be repaired to Architect's acceptance.